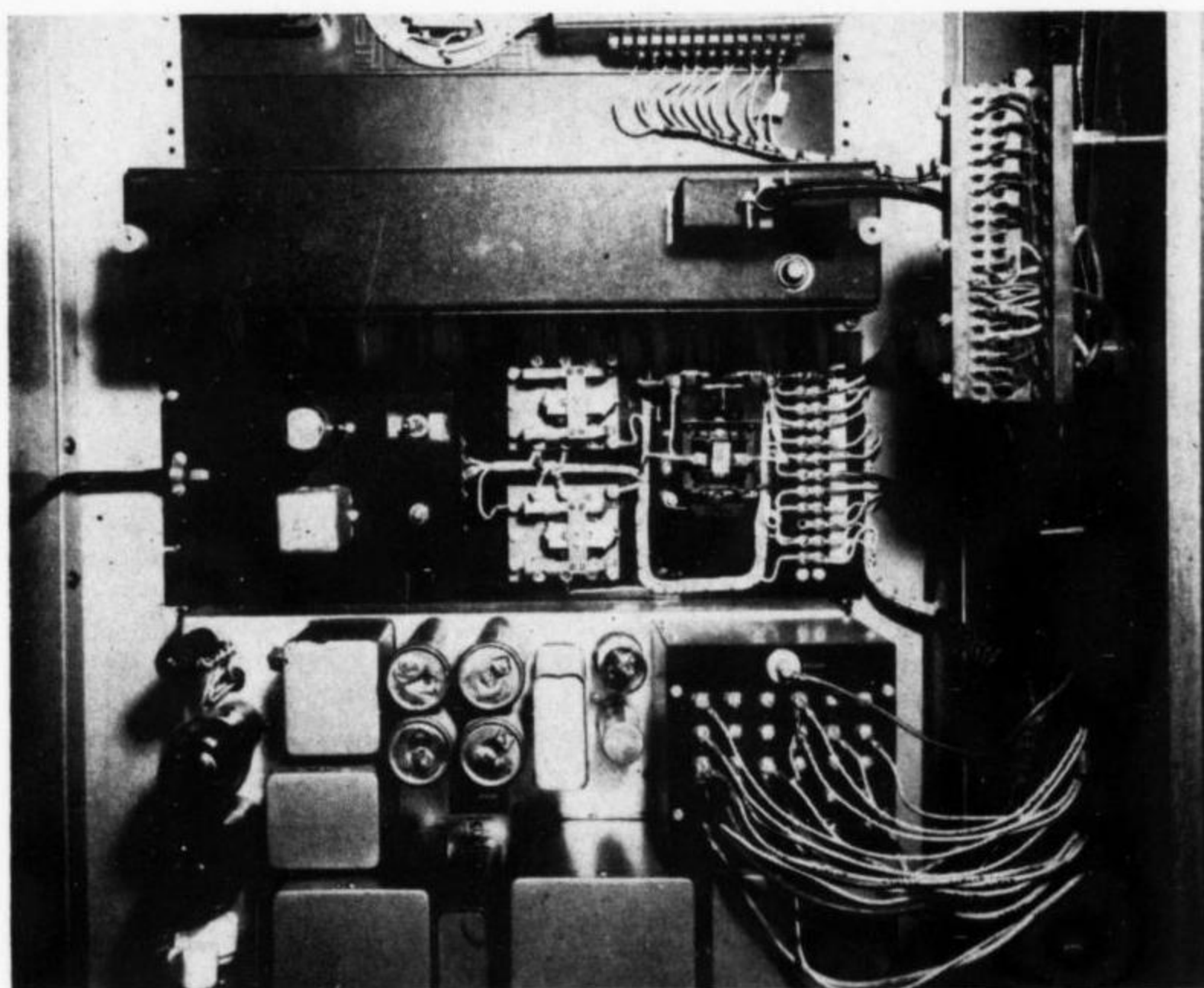




Whether or not anyone is on duty at Kingman, Ariz., Municipal Airport a radio beam...



from the plane operates this electronic equipment in the control tower. That's how ...

Airplane Pilots Turn on Lights

Three pulses from the radio in an airliner as the plane approaches Kingman Municipal Airport at Kingman, Ariz., turn on the field and associated lighting system. This automatic method saves manpower and insures Bonanza Air Lines, using the airport, light for landing its planes no matter what time of night they may arrive.

The system is operated on a carrier-controlled relay unit and associated equipment operating in conjunction

with the squelch circuit of the VHF receiver on the Bonanza Air Lines assigned frequency. The receiver squelch circuit control is adjustable to operate the carrier-control relay and associated equipment when the receiver is excited with a predetermined number of carrier pulses from the aircraft transmitter, within a radius of approximately one to one hundred miles of that receiving point.

The action of the controlled relay

is transferred to a selector or stroger unit, whose internal functions follow and step in accordance with the carrier-relay pulse action. The step action of the selection unit, together with its internal holding and other associated relay, controls a bank of external relays whose function, in turn, controls the master field light-control circuits.

Incorporated in this circuit is a self-locking electrical feature that protects the master control relay from accidentally becoming de-energized because of the electrical and mechanical action of the stroger unit immediately after the energizing cycle. Further, simultaneous action triggers and trips the stroger unit, completing the cycle. Three pulses are used to turn on the lights and five pulses to turn off. This is accomplished by pressing or keying the mike button control of the aircraft VHF transmitter. Spacing is approximately one-half second apart. Electronic control is the master, overriding manual controls points on the ground.

The original receiver did not have this relay incorporated and it was fabricated in the shop of Bonanza Air Lines under direction of R. Mohr, superintendent of communications. Success of this device has caused demand for more production of it and Wilcox Electric Corp. of Kansas City now manufactures it.

The stroger unit, which is the heart of the system, is controlled by the pulse action of the carrier-control relay. It, and associated circuit, is so arranged as to transfer when excited by the carrier-control relay pulses, whose action is then transferred to the master-control relays.

Heavy static, lightning discharges or other phenomenal disturbances that might cause momentary pulsing are suppressed by the squelch action of the receiver. Further precautionary action lies in the operating sequence and in the locking features of the circuit. For example, say the lights have been turned on, to turn them off requires precisely five pulses from the aircraft transmitter—not four, or six, or any other combination.

The equipment, however, may be adjusted to operate on many other combinations to suit the particular requirements. For example, says Mohr, a private operator could adjust the sequence so that only he, who knew the combination, could control it. For the cross-country or visiting pilot, the sequence is standard. Until manually changed, the equipment will remain in the operating sequence that has been selected.

Testing procedure is accomplished by keying to the ground station transmitter in the sequence prescribed.